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2050 FAST MPO DEMAND FORECAST REPORT



August 2026

Fairbanks Area Surface Transportation (FAST) Planning

Report Title:

2050 FAST MPO DEMAND FORECAST REPORT

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Fairbanks Area Surface Transportation (FAST) Planning

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LIST OF ABBREVIATIONS

DOT&PF	Alaska Department of Transportation and Public Facilities
DOLWD	Alaska Department of Labor and Workforce Development
LOS	Level of Service
MPA	Metropolitan Planning Area
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
PM 2.5	Particulate Matter less than 2.5 microns
VHD	Vehicle Hours of Delay
VHT	Vehicle Hours Traveled
VMT	Vehicle Miles Travel

1.0 ANTICIPATED ROAD PROJECTS

Table 1 lists the anticipated road projects included in the Baseline and Build scenarios by the year in which the improvement is anticipated to be open to traffic. Baseline indicates that the project is either already constructed or planned and programmed for funding while the Build scenario includes proposed projects that have not been programmed.

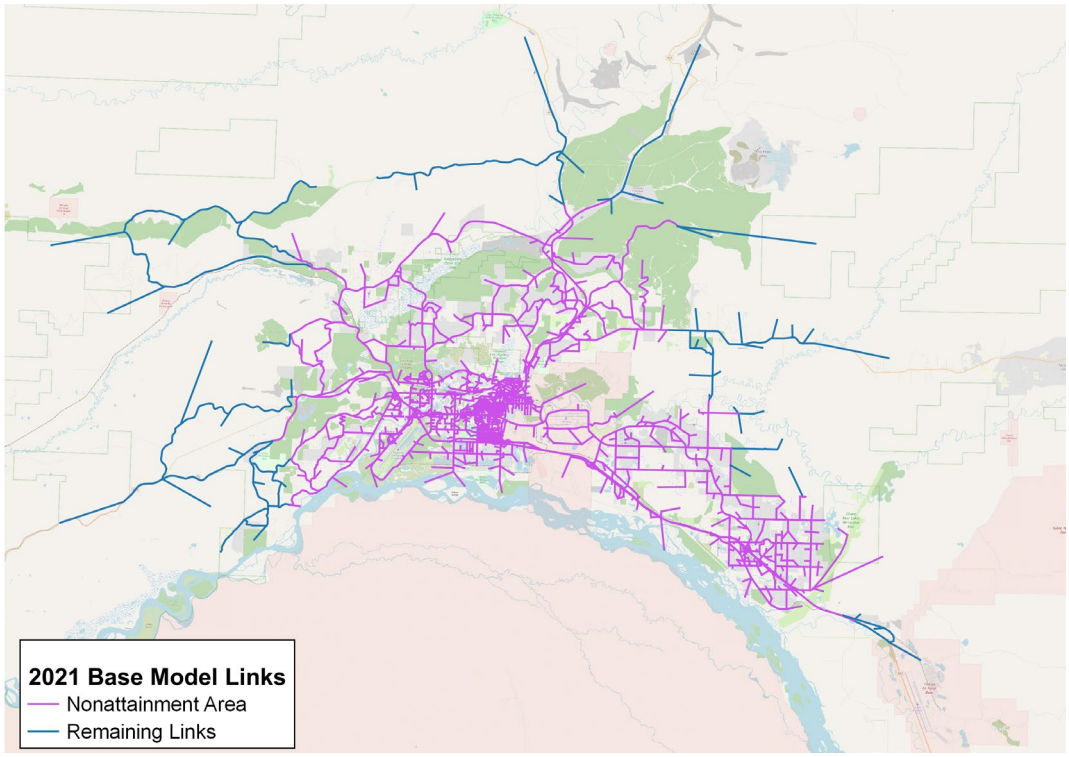
TABLE 1: ANTICIPATED ROAD PROJECTS BY IMPROVEMENT YEAR

Project	Network	Improvement Year
Cushman St Improvements	Baseline	2015
Richardson Hwy MP 353-357 Access Improvements	Baseline	2019
HSIP: Badger Rd TWLTL	Baseline	2019
3rd St Improvements	Baseline	2021
Lathrop St Extension	Baseline	2022
Steese/Johansen Expy Interchange	Baseline	2030
Cowles St Reconstruction	Baseline	2024
Old Steese Hwy Reconstruction	Baseline	2027
North Tanana Dr Extension	Baseline	2030
Richardson Hwy/Old Richardson Hwy Interchange (MP 360)	Build	2050
Railroad Overpass: College Rd to C St	Build	2050
Phillips Field Rd/Minnie St Intersection Alignment	Build	2050
Peridot St Reconstruction	Build	2050
College Rd Safety and Access Improvements	Build	2028
Barnette St Lane Reduction	Build	2032

2.0 PM 2.5 NONATTAINMENT AREA FORECAST

Portions of the Fairbanks North Star Borough were designated as Nonattainment areas under the National Ambient Air Quality Standards (NAAQS) for Particulate Matter less than 2.5 microns (PM 2.5) under the 2006 standard starting in 2009.[1] Figure 1 shows the 2021 Base year model links in the nonattainment area in purple and remaining model links in blue. This section describes the modeled performance on links in the nonattainment area.

FIGURE 1: MAP OF NONATTAINMENT AREA LINKS



The difference between the 2021 Base and 2050 Baseline scenario is presented to demonstrate the impact of 2050 socioeconomic conditions in a baseline or no-build scenario. Then the differences from Baseline to Build are presented for interim model years 2027, 2030, and 2040 for the nonattainment area. Finally, the difference in 2050 Baseline to Build is presented.

[1] U.S. Environmental Protection Agency. Alaska Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. https://www3.epa.gov/airquality/greenbook/anayo_ak.html

2.1 2021 BASE VS 2050 BASELINE SCENARIO

The 2050 Baseline scenario models future system performance using the forecasted socioeconomic data and the no-build road network. This is the baseline scenario against which the future year build scenario will be compared.

Table 2 provides a comparison of key performance statistics between the 2021 base year and the 2050 baseline scenario for facilities within the PM 2.5 nonattainment zone. The 2050 baseline scenario forecasted 1.4 million daily Vehicle Miles Traveled (VMT) and approximately 33,200 Vehicle Hours Traveled (VHT) within the nonattainment area. This corresponds to a 20% increase in VMT and 19% increase in VHT, a lower overall increase than the full model region. Vehicle Hours of Delay (VHD) is the difference between actual VHT including delay due to congestion and theoretical VHT at free-flow speeds. VHD is also expressed as a percentage of VHT to indicate the relative amount of delay.

TABLE 2: 2021 BASE YEAR ESTIMATES VERSUS 2050 BASELINE FORECAST DAILY VMT, VHT, AND VHD COMPARISON FOR FACILITIES IN THE NONATTAINMENT AREA

FACILITY TYPE	2021 VMT	2050 VMT	2021 VHT	2050 VHT	2021 VHD	2050 VHD	2021 VHD AS % OF VHT	2050 VHD AS % OF VHT
Freeway	260,960	403,346	4,806	7,409	0	0	0.00%	0.00%
Expressway	124,997	129,079	2,534	2,643	4	7	0.14%	0.27%
Major Arterial	183,353	200,931	4,710	5,274	173	327	3.68%	6.20%
Minor Arterial	270,997	301,056	6,825	7,621	53	105	0.78%	1.38%
Major Collector	61,514	76,629	1,250	1,538	0	0	0.00%	0.01%
Minor Collector	157,984	173,875	4,339	4,832	11	50	0.25%	1.04%
Local	67,553	74,761	2,434	2,702	68	57	2.78%	2.12%
Ramp (Controlled)	7,590	8,960	228	271	0	0	0.00%	0.00%
Ramp (Uncontrolled)	30,692	35,757	795	936	0	0	0.00%	0.01%
Total	1,165,641	1,404,395	27,922	33,225	308	547	1.10%	1.65%
2050/2021 PctDiff		20.48%		18.99%		77.42%		

Figure 2 shows the total Vehicle Hours of Delay by facility type for 2027 Baseline and Build scenarios in the Nonattainment area. Figure 3 shows Vehicle Hours of Delay as a percentage of Vehicle Hours of Travel. The majority of the increase in VHD affects Major Arterials, with a smaller increase on Minor Arterials and Minor Collectors.

FIGURE 2: 2050 BASELINE VERSUS 2021 BASE VEHICLE HOURS OF DELAY BY FACILITY TYPE IN NONATTAINMENT AREA

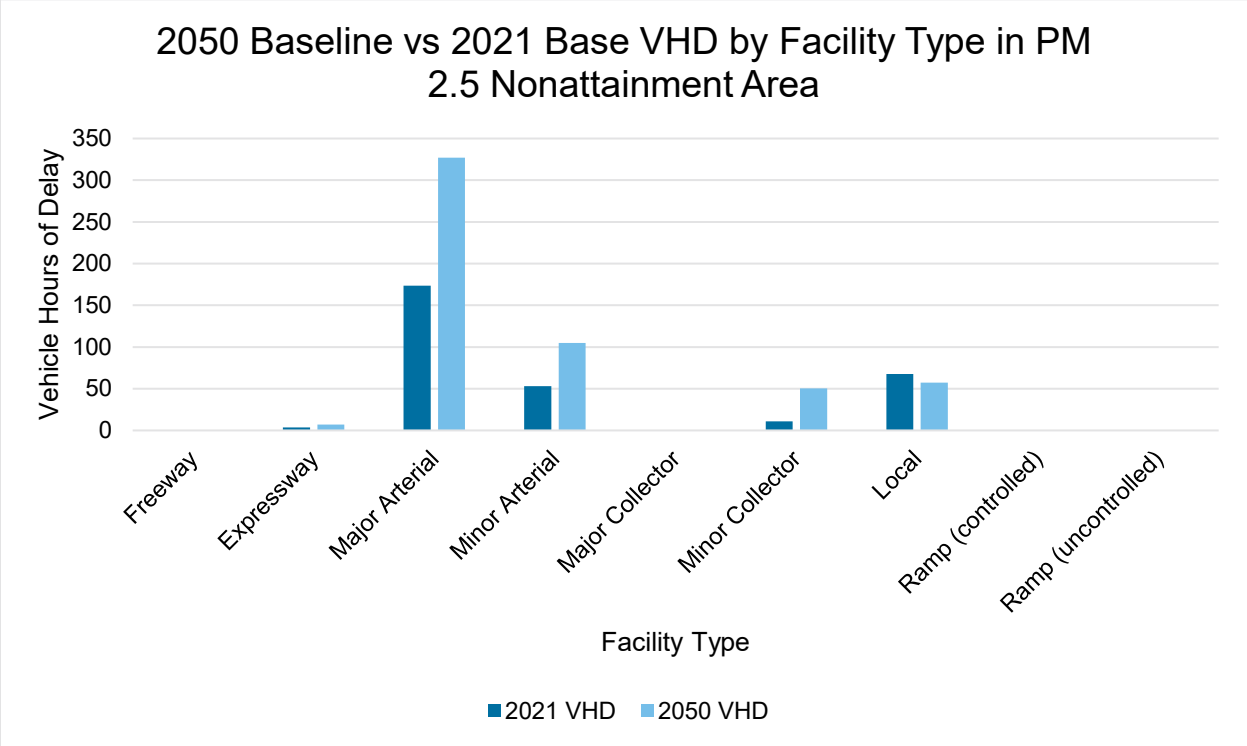
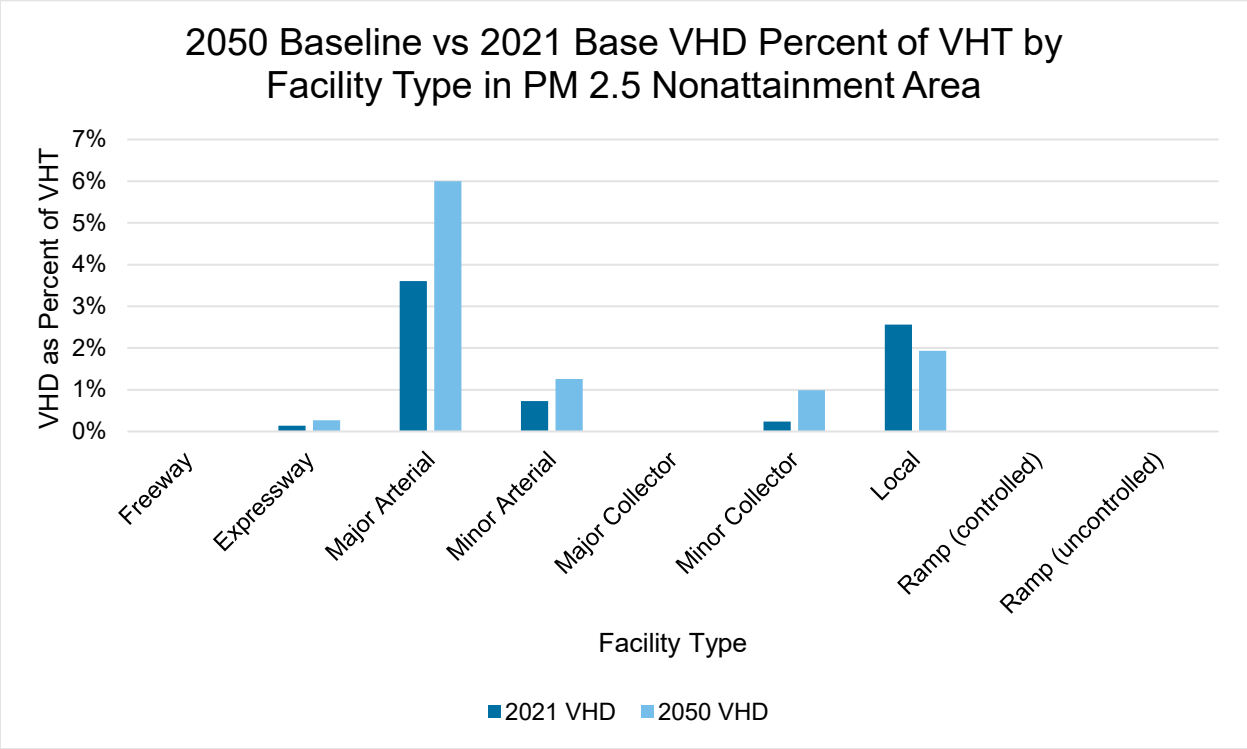


FIGURE 3: 2050 BASELINE VERSUS 2021 BASE VHD AS PERCENT OF VHT BY FACILITY TYPE IN NONATTAINMENT AREA

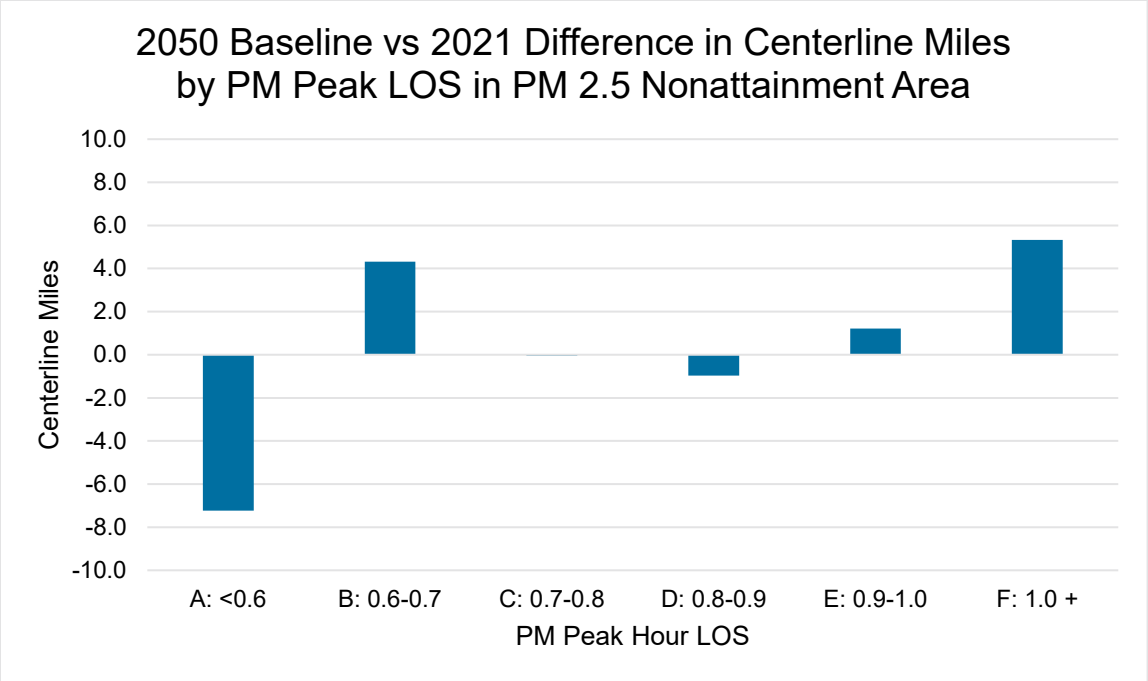


Level of Service (LOS) is determined by the ratio of modeled demand to roadway capacity. The LOS grade becomes worse as demand approaches capacity. Table 3 shows centerline miles by LOS grade in the PM Peak hour comparing 2021 Base and 2050 Baseline for the FAST model region within the PM 2.5 nonattainment zone. There is a difference of 3 centerline miles between the 2021 Base roadway network and the 2050 Baseline network in the nonattainment zone. In the 2050 Baseline scenario, 7 centerline miles of roads would move from LOS A to lower levels of service. There is a slight decrease in LOS D, a slight increase in LOS E and larger increases in LOS B and F. Figure 4 shows the difference in centerline miles by LOS between the 2021 Base and 2050 Baseline scenarios.

TABLE 3: 2021 BASE YEAR ESTIMATES VERSUS 2050 BASELINE ROAD CENTERLINE MILES PM PEAK LOS CATEGORY IN NONATTAINMENT ZONE

PM PEAK LEVEL OF SERVICE (D/C)	2021 CENTERLINE MILES	2050 CENTERLINE MILES	2021-2050 CHANGE	2021 % OF MILES BY LOS	2050 % OF MILES BY LOS
A: <0.6	411	403	-7.2	93%	90%
B: 0.6-0.7	6	10	4.3	1%	2%
C: 0.7-0.8	5	5	0.0	1%	1%
D: 0.8-0.9	7	6	-1.0	1%	1%
E: 0.9-1.0	5	6	1.2	1%	1%
F: 1.0 +	10	15	5.3	2%	3%
Total	443	446	2.6	100%	100%

FIGURE 4: 2050 BASELINE FORECAST CENTERLINE MILES DIFFERENCE FROM 2021 BY LOS CATEGORY WITHIN PM 2.5 NONATTAINMENT ZONE



2.2 2027 BASELINE VS BUILD

Table 4 lists VMT, VHT, and VHD for the PM 2.5 Nonattainment area by facility type for the 2027 Baseline and Build scenarios. The Build scenario is very similar to the Baseline in terms of VMT and VHT while there was a small decrease in VHD in the Build scenario.

TABLE 4: 2027 BASELINE VS BUILD FORECAST DAILY VMT, VHT, AND VHD COMPARISON FOR FACILITIES IN THE NONATTAINMENT AREA

FACILITY TYPE	2027 BASELINE VMT	2027 BUILD VMT	2027 BASELINE VHT	2027 BUILD VHT	2027 BASELINE VHD	2027 BUILD VHD	2027 BASELINE VHD AS % OF VHT	2027 BUILD VHD AS % OF VHT
Freeway	365,847	360,839	6,719	6,629	0	0	0.00%	0.00%
Expressway	141,495	141,033	2,868	2,858	9	8	0.30%	0.29%
Major Arterial	204,306	207,861	5,327	5,413	327	316	6.15%	5.83%
Minor Arterial	317,381	318,262	7,826	7,856	81	85	1.04%	1.09%
Major Collector	72,531	72,556	1,477	1,478	0	0	0.00%	0.00%
Minor Collector	175,060	175,209	4,799	4,802	24	22	0.49%	0.47%
Local	80,455	80,562	2,830	2,834	59	60	2.08%	2.11%
Ramp (Controlled)	8,361	8,315	254	251	0	0	0.00%	0.00%
Ramp (Uncontrolled)	33,818	33,819	875	874	0	0	0.00%	0.00%
Total	1,399,255	1,398,457	32,974	32,993	500	491	1.52%	1.49%
Build vs Baseline % Difference		-0.06%		0.06%		-1.70%		

Figure 5 shows the total Vehicle Hours of Delay by facility type for 2027 Baseline and Build scenarios in the Nonattainment area. Figure 6 shows Vehicle Hours of Delay as a percentage of Vehicle Hours of Travel. The majority of the decrease in delay occurred on Major Arterials along with a slight decrease on Minor Collectors while there were small increases on Minor Arterials and Local roads.

FIGURE 5: 2027 BASELINE VS BUILD FORECAST VEHICLE HOURS OF DELAY BY FACILITY TYPE IN NONATTAINMENT AREA

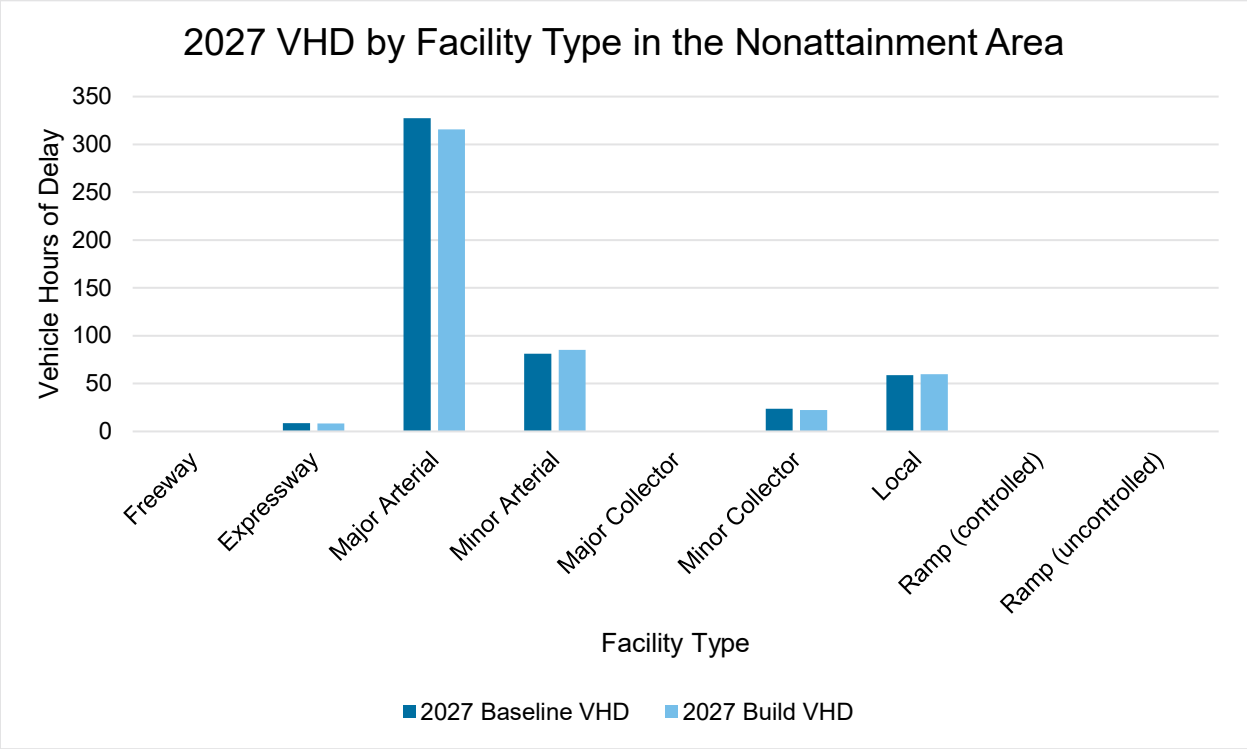


FIGURE 6: 2027 BASELINE VS BUILD FORECAST VHD AS PERCENT OF VHT BY FACILITY TYPE IN NONATTAINMENT AREA

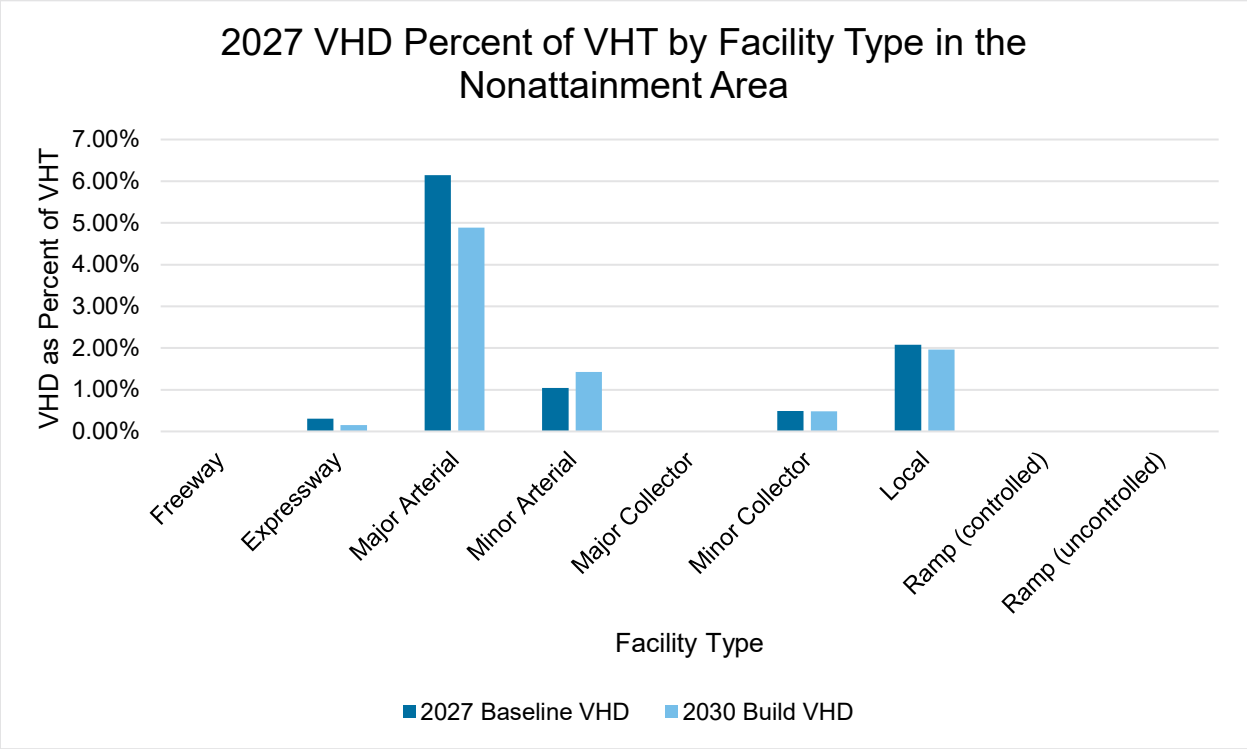
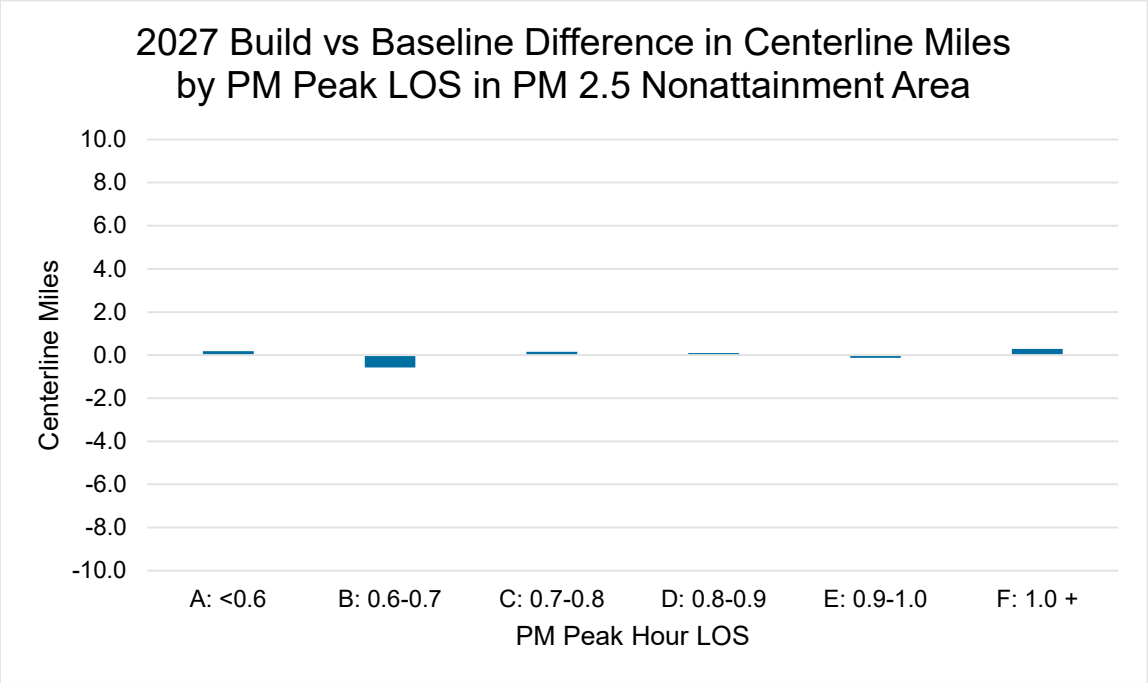


Table 5 shows centerline miles by LOS within the PM 2.5 nonattainment zone between the 2027 Baseline and Build scenarios. There is no change in overall centerline miles of road and very slight changes between LOS categories. Figure 7 shows the difference in LOS centerline miles between the 2027 Baseline and Build scenarios.

TABLE 5: 2027 BUILD VS BASELINE DIFFERENCE IN ROAD CENTERLINE MILES BY PM PEAK LOS CATEGORY IN NONATTAINMENT ZONE

PM PEAK LEVEL OF SERVICE (D/C)	2027 BASELINE CENTERLINE MILES	2027 BUILD CENTERLINE MILES	BUILD MINUS BASELINE CHANGE	2027 BASELINE % OF MILES BY LOS	2027 BUILD % OF MILES BY LOS
A: <0.6	405	405	0.2	91%	91%
B: 0.6-0.7	9	8	-0.6	2%	2%
C: 0.7-0.8	6	6	0.1	1%	1%
D: 0.8-0.9	8	9	0.1	2%	2%
E: 0.9-1.0	4	4	-0.1	1%	1%
F: 1.0 +	13	13	0.3	3%	3%
Total	445	445	0.0	100%	100%

FIGURE 7: 2027 BUILD VS BASELINE DIFFERENCE IN CENTERLINE MILES BY PM PEAK LOS CATEGORY WITHIN PM 2.5 NONATTAINMENT ZONE



2.3 2030 BASELINE VS BUILD

Table 6 lists VMT, VHT, and VHD for the PM 2.5 Nonattainment area by facility type for the 2030 Baseline and Build scenarios. The Build scenario is very similar to the Baseline in terms of VMT and VHT while there was a small decrease in VHD overall in the Build scenario.

TABLE 6: 2030 BASELINE VS BUILD FORECAST DAILY VMT, VHT, AND VHD COMPARISON FOR FACILITIES IN THE NONATTAINMENT AREA

FACILITY TYPE	2030 BASELINE VMT	2030 BUILD VMT	2030 BASELINE VHT	2030 BUILD VHT	2030 BASELINE VHD	2030 BUILD VHD	2030 BASELINE VHD AS % OF VHT	2030 BUILD VHD AS % OF VHT
Freeway	398,876	384,934	7,322	7,068	0	0	0.00%	0.00%
Expressway	121,181	121,157	2,482	2,480	7	4	0.27%	0.15%
Major Arterial	199,597	199,466	5,182	5,123	286	251	5.51%	4.89%
Minor Arterial	321,765	333,798	7,925	8,161	84	116	1.06%	1.43%
Major Collector	73,875	73,779	1,503	1,502	0	0	0.00%	0.00%
Minor Collector	177,843	177,924	4,874	4,875	26	23	0.54%	0.48%
Local	81,665	82,473	2,863	2,893	53	57	1.87%	1.97%
Ramp (Controlled)	8,823	8,638	268	261	0	0	0.00%	0.00%
Ramp (Uncontrolled)	34,116	33,624	895	878	0	0	0.00%	0.01%
Total	1,417,740	1,415,792	33,313	33,241	456	451	1.37%	1.36%
Build vs Baseline % Difference		-0.14%		-0.22%		-1.10%		

Figure 8 shows the total Vehicle Hours of Delay by facility type for 2030 Baseline and Build scenarios in the Nonattainment area. Figure 9 shows Vehicle Hours of Delay as a percentage of Vehicle Hours of Travel. Although delay increased by 39% on Minor Arterials and slightly increased on Local roads, decreases in delay on Major Arterials, Expressways, and Minor Collectors contributed to an overall decrease in delay.

FIGURE 8: 2030 BASELINE VS BUILD FORECAST VEHICLE HOURS OF DELAY BY FACILITY TYPE IN NONATTAINMENT AREA

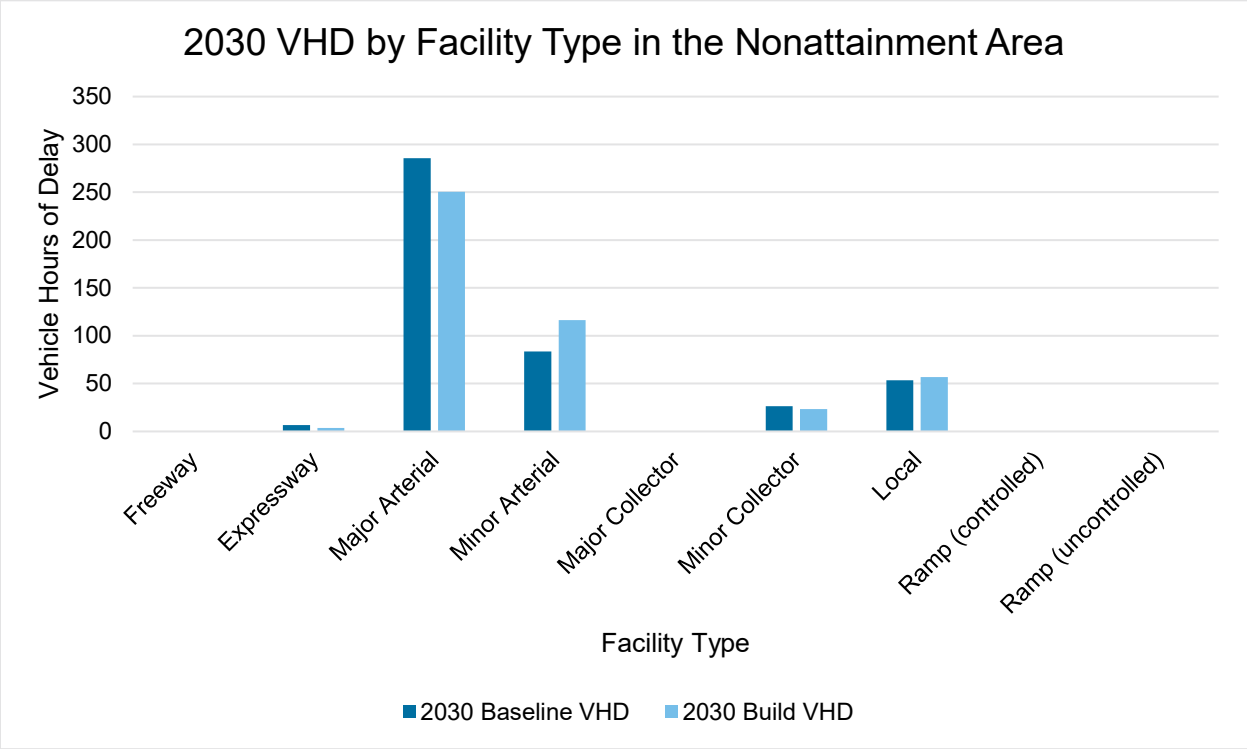


FIGURE 9: 2030 BASELINE VS BUILD FORECAST VHD AS PERCENT OF VHT BY FACILITY TYPE IN NONATTAINMENT AREA

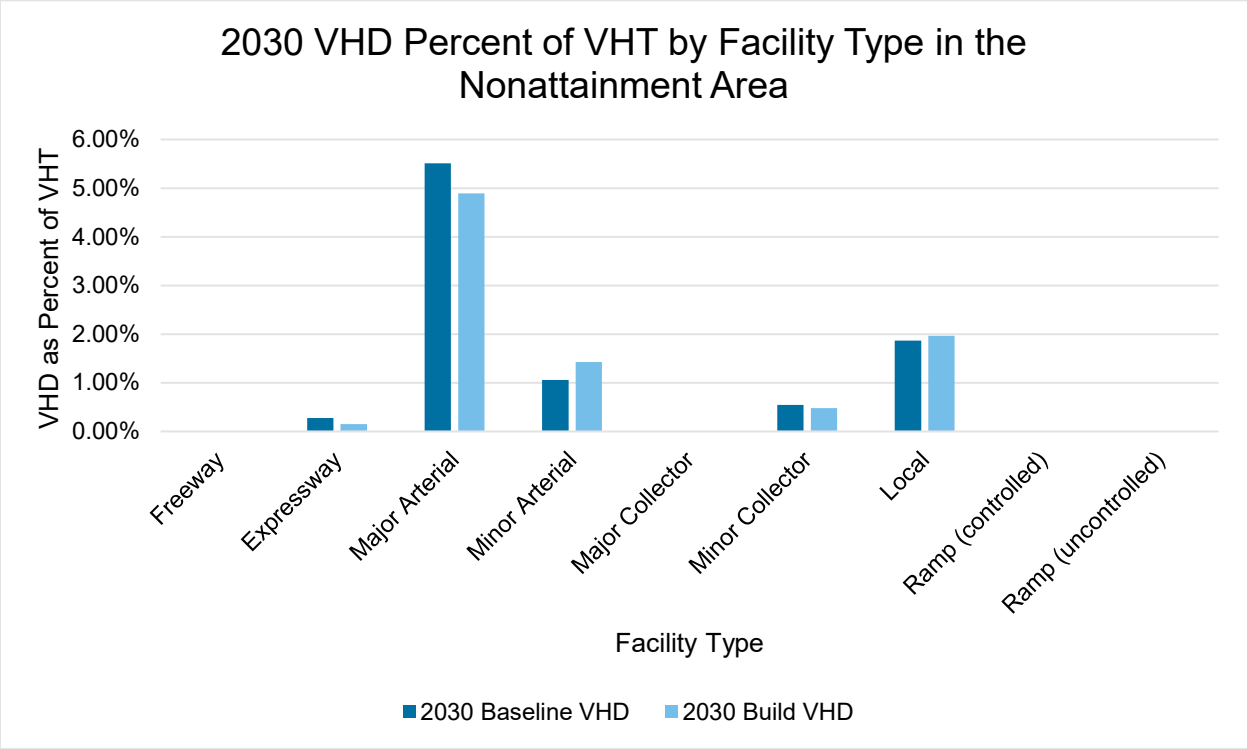
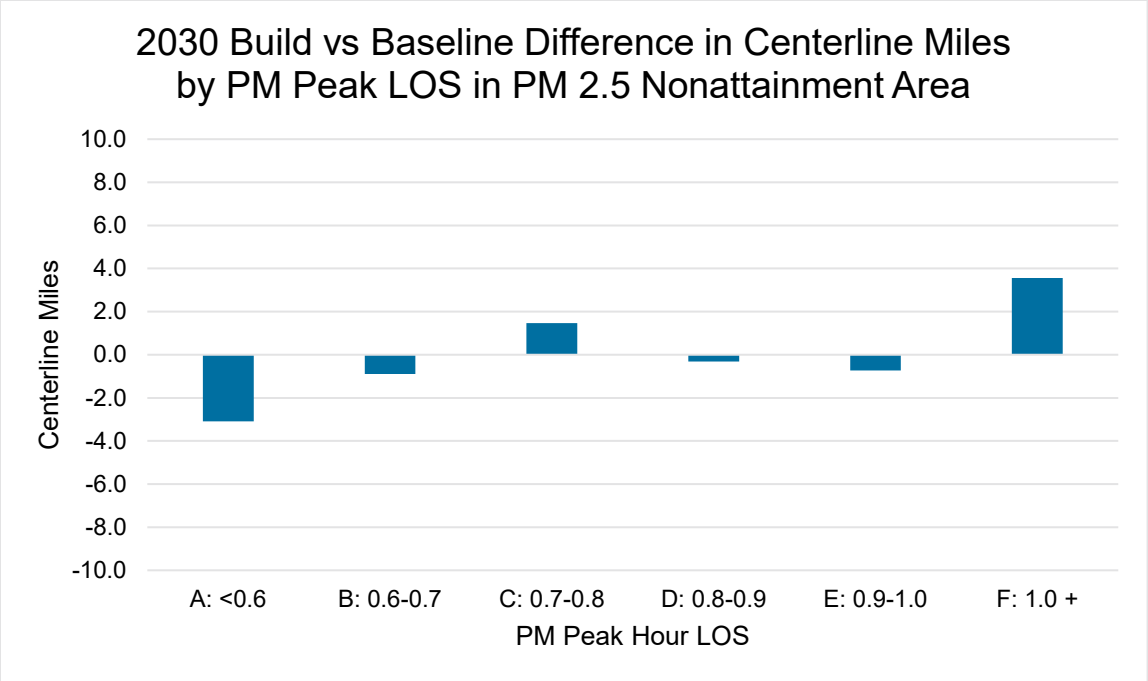


Table 7 shows centerline miles by LOS within the PM 2.5 nonattainment zone between the 2030 Baseline and Build scenarios. There is no change in overall centerline miles of road and 5 miles of roadway shifted from LOS A, B, D, and E to LOS C and F. Figure 10 shows the difference in LOS centerline miles between the 2030 Baseline and Build scenarios.

TABLE 7: 2030 BUILD VS BASELINE DIFFERENCE IN ROAD CENTERLINE MILES BY PM PEAK LOS CATEGORY IN NONATTAINMENT ZONE

PM PEAK LEVEL OF SERVICE (D/C)	2030 BASELINE CENTERLINE MILES	2030 BUILD CENTERLINE MILES	BUILD MINUS BASELINE CHANGE	2030 BASELINE % OF MILES BY LOS	2030 BUILD % OF MILES BY LOS
A: <0.6	406	403	-3.1	91%	90%
B: 0.6-0.7	9	8	-0.9	2%	2%
C: 0.7-0.8	6	7	1.5	1%	2%
D: 0.8-0.9	8	7	-0.3	2%	2%
E: 0.9-1.0	4	3	-0.7	1%	1%
F: 1.0 +	12	16	3.6	3%	4%
Total	446	446	0.0	100%	100%

FIGURE 10: 2030 BUILD VS BASELINE DIFFERENCE IN CENTERLINE MILES BY PM PEAK LOS CATEGORY WITHIN PM 2.5 NONATTAINMENT ZONE



2.4 2040 BASELINE VS BUILD

Table 8 lists VMT, VHT, and VHD for the PM 2.5 Nonattainment area by facility type for the 2040 Baseline and Build scenarios. The Build scenario is very similar to the Baseline in terms of VMT and VHT while there was a modest decrease in VHD overall in the Build scenario.

TABLE 8: 2040 BASELINE VS BUILD FORECAST DAILY VMT, VHT, AND VHD COMPARISON FOR FACILITIES IN THE NONATTAINMENT AREA

FACILITY TYPE	2040 BASELINE VMT	2040 BUILD VMT	2040 BASELINE VHT	2040 BUILD VHT	2040 BASELINE VHD	2040 BUILD VHD	2040 BASELINE VHD AS % OF VHT	2040 BUILD VHD AS % OF VHT
Freeway	428,100	413,510	7,856	7,590	0	0	0.00%	0.00%
Expressway	124,201	125,870	2,545	2,576	6	4	0.25%	0.16%
Major Arterial	205,916	205,080	5,345	5,266	315	272	5.90%	5.17%
Minor Arterial	329,750	343,367	8,088	8,383	93	132	1.15%	1.57%
Major Collector	77,628	77,504	1,574	1,573	0	0	0.00%	0.00%
Minor Collector	182,198	180,694	4,992	4,951	40	27	0.80%	0.54%
Local	83,535	84,130	2,921	2,941	53	56	1.80%	1.92%
Ramp (Controlled)	8,890	8,747	270	264	0	0	0.00%	0.00%
Ramp (Uncontrolled)	34,912	34,475	914	899	0	0	0.01%	0.01%
Total	1,475,131	1,473,378	34,505	34,442	508	491	1.47%	1.43%
Build vs Baseline % Difference		-0.12%		-0.18%		-3.25%		

Figure 11 shows the total Vehicle Hours of Delay by facility type for 2040 Baseline and Build scenarios in the Nonattainment area. Figure 12 shows Vehicle Hours of Delay as a percentage of Vehicle Hours of Travel. Most of the decrease in delay occurred on Major Arterials, with slight decreases on Minor Collectors and Expressways. There was a 42% increase in VHD on Minor Arterials and a slight increase on Local roads.

FIGURE 11: 2040 BASELINE VS BUILD FORECAST VEHICLE HOURS OF DELAY BY FACILITY TYPE IN NONATTAINMENT AREA

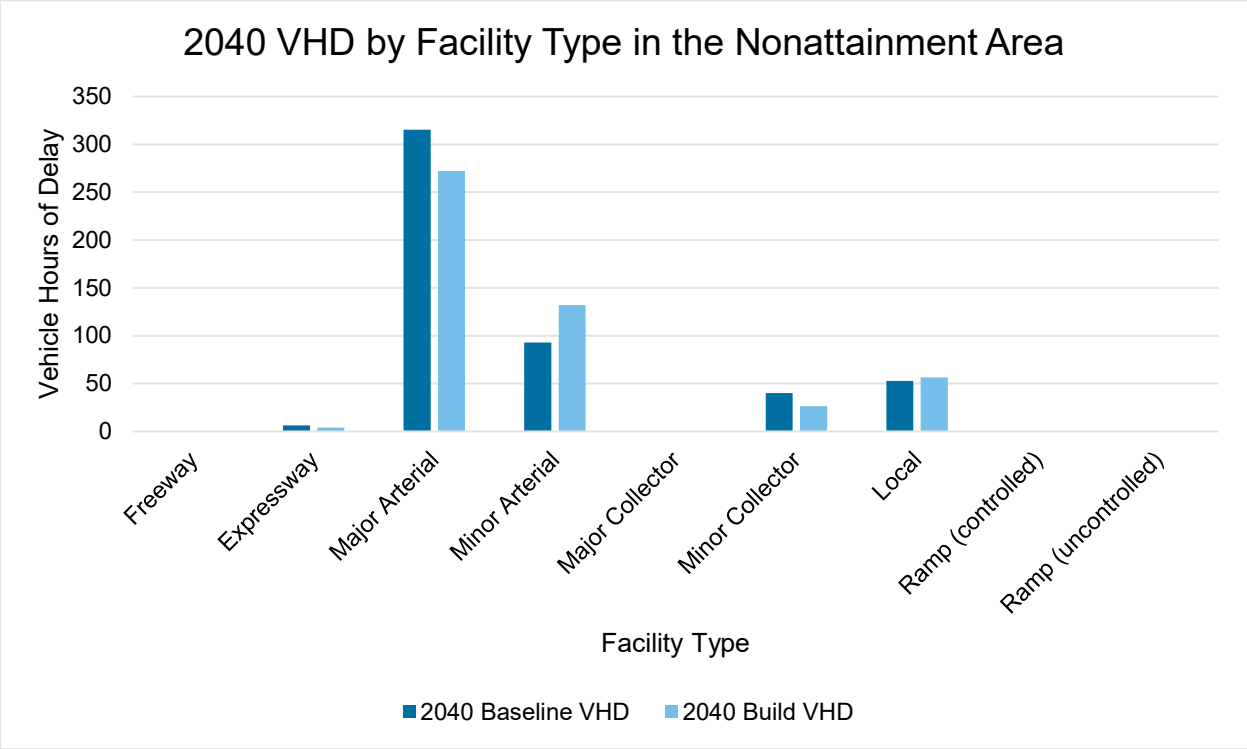


FIGURE 12: 2040 BASELINE VS BUILD FORECAST VHD AS PERCENT OF VHT BY FACILITY TYPE IN NONATTAINMENT AREA

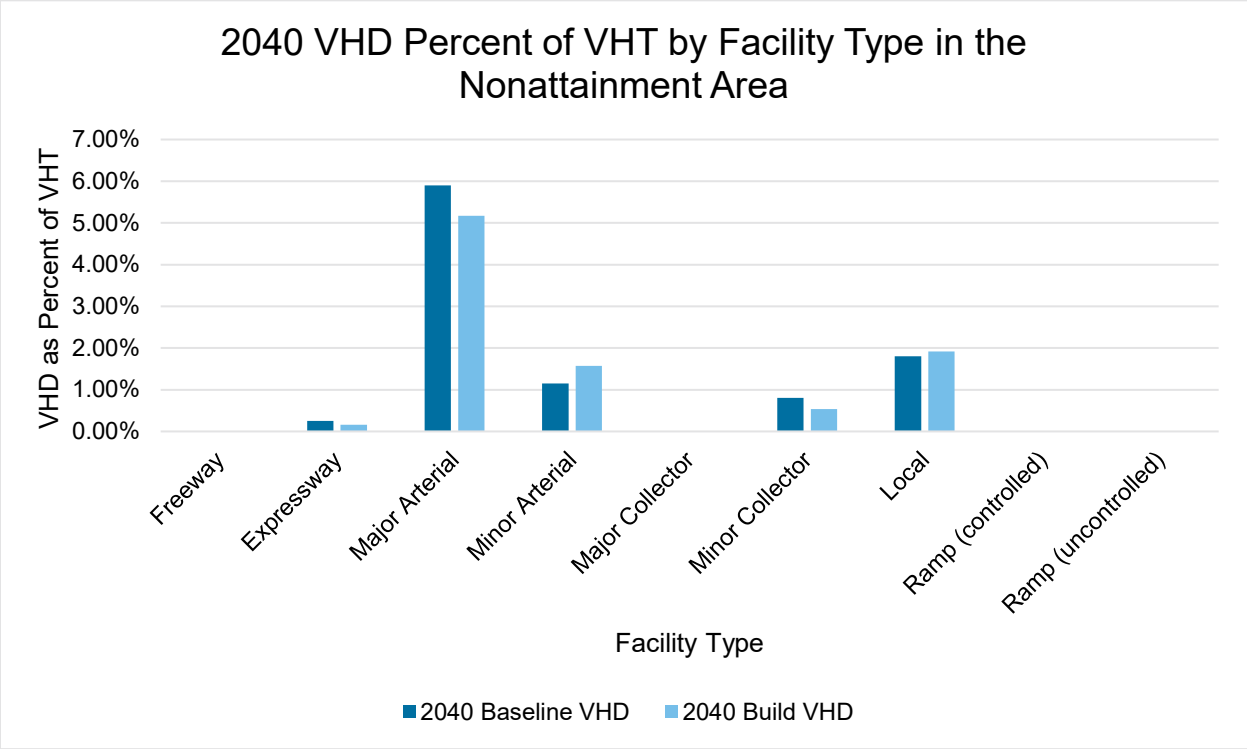
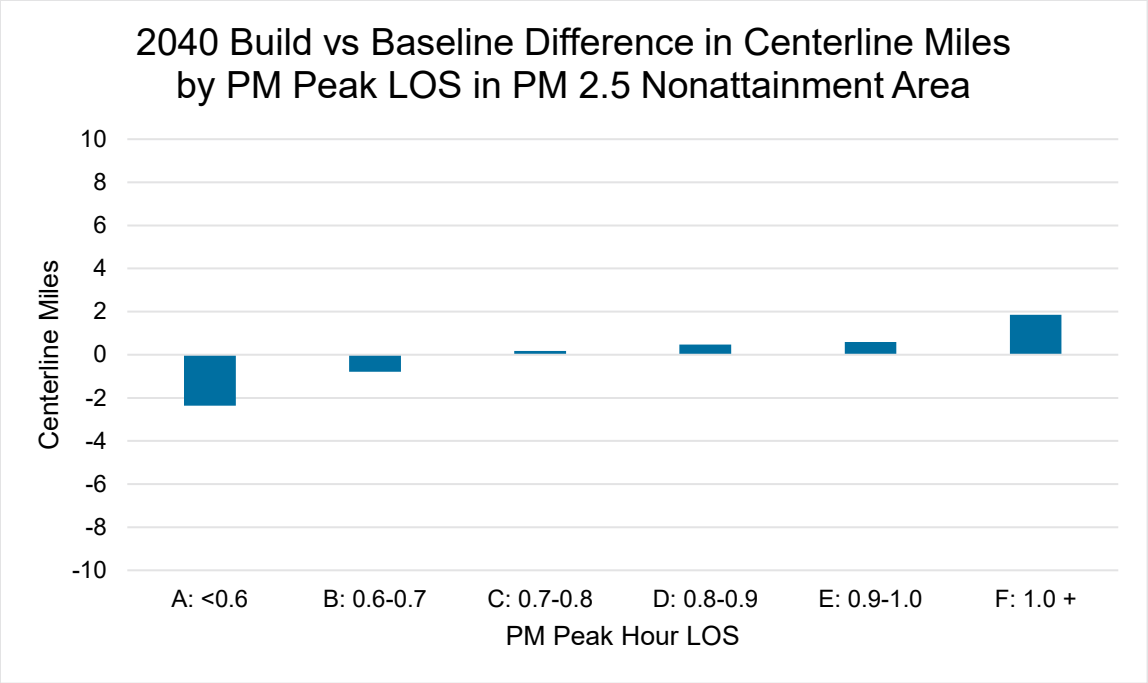


Table 9 shows centerline miles by LOS within the PM 2.5 nonattainment zone between the 2040 Baseline and Build scenarios. There is a very slight decrease in overall centerline miles of road in the Build scenario. The number of centerline miles in LOS A and B decreased slightly while road miles experiencing LOS F increased the most followed by smaller increases in LOS E, D, and C. Figure 13 shows the difference in LOS centerline miles between the 2040 Baseline and Build scenarios.

TABLE 9: 2040 BUILD VS BASELINE DIFFERENCE IN ROAD CENTERLINE MILES BY PM PEAK LOS CATEGORY IN NONATTAINMENT ZONE

PM PEAK LEVEL OF SERVICE (D/C)	2040 BASELINE CENTERLINE MILES	2040 BUILD CENTERLINE MILES	BUILD MINUS BASELINE CHANGE	2040 BASELINE % OF MILES BY LOS	2040 BUILD % OF MILES BY LOS
A: <0.6	404	402	-2.4	91%	90%
B: 0.6-0.7	10	10	-0.8	2%	2%
C: 0.7-0.8	6	6	0.2	1%	1%
D: 0.8-0.9	6	6	0.5	1%	1%
E: 0.9-1.0	6	6	0.6	1%	1%
F: 1.0 +	14	16	1.9	3%	4%
Total	446	446	-0.1	100%	100%

FIGURE 13: 2040 BUILD VS BASELINE DIFFERENCE IN CENTERLINE MILES BY LOS CATEGORY WITHIN PM 2.5 NONATTAINMENT ZONE



2.5 2050 BASELINE VS BUILD

Table 10 lists VMT, VHT, and VHD for the PM 2.5 Nonattainment area by facility type for the 2050 Baseline and Build scenarios. The Build scenario is very similar to the Baseline in terms of VMT and VHT while there was a modest decrease in VHD overall in the Build scenario.

TABLE 10: 2050 BASELINE VS BUILD FORECAST DAILY VMT, VHT, AND VHD COMPARISON FOR FACILITIES IN THE NONATTAINMENT AREA

FACILITY TYPE	2050 BASELINE VMT	2050 BUILD VMT	2050 BASELINE VHT	2050 BUILD VHT	2050 BASELINE VHD	2050 BUILD VHD	2050 BASELINE VHD AS % OF VHT	2050 BUILD VHD AS % OF VHT
Freeway	458,349	444,220	8,409	8,152	0	0	0.00%	0.00%
Expressway	129,079	129,352	2,643	2,647	7	4	0.27%	0.16%
Major Arterial	210,736	210,860	5,452	5,402	327	286	6.00%	5.29%
Minor Arterial	340,285	353,249	8,334	8,590	105	145	1.26%	1.69%
Major Collector	82,077	82,236	1,659	1,665	0	0	0.00%	0.00%
Minor Collector	186,206	185,725	5,110	5,091	50	44	0.99%	0.87%
Local	85,193	86,011	2,972	3,000	57	59	1.93%	1.97%
Ramp (Controlled)	8,960	9,191	271	279	0	0	0.00%	0.00%
Ramp (Uncontrolled)	35,757	34,139	936	888	0	0	0.01%	0.01%
Total	1,536,642	1,534,982	35,787	35,716	547	539	1.53%	1.51%
Build vs Baseline % Difference		-0.11%		-0.20%		-1.53%		

Figure 14 shows the total Vehicle Hours of Delay by facility type for 2050 Baseline and Build scenarios in the Nonattainment area. Figure 15 shows Vehicle Hours of Delay as a percentage of Vehicle Hours of Travel. The largest decrease in VHD occurred on Major Arterials while a similar increase of about 40 hours of delay occurred on Minor Arterials. There was a smaller decrease on both Minor Collectors and Expressways and a slight increase on Local roads.

FIGURE 14: 2050 BASELINE VS BUILD FORECAST VEHICLE HOURS OF DELAY BY FACILITY TYPE IN NONATTAINMENT AREA

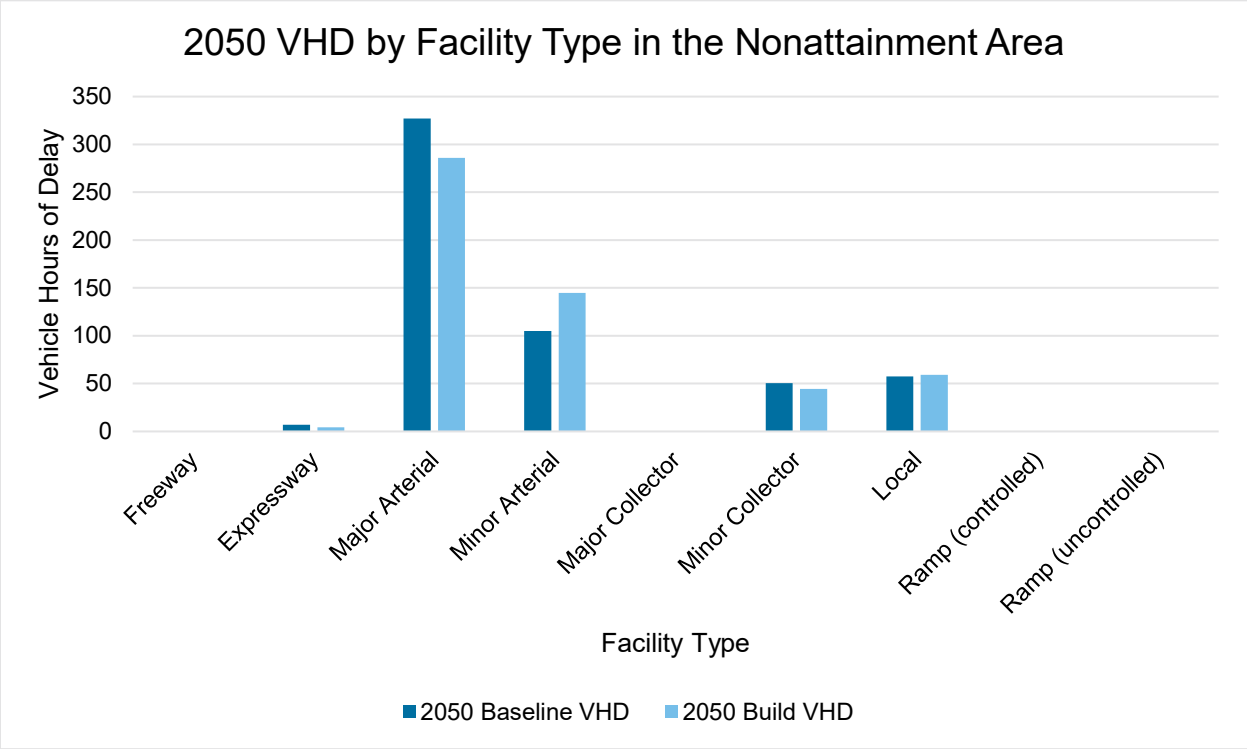


FIGURE 15: 2050 BASELINE VS BUILD FORECAST VHD AS PERCENT OF VHT BY FACILITY TYPE IN NONATTAINMENT AREA

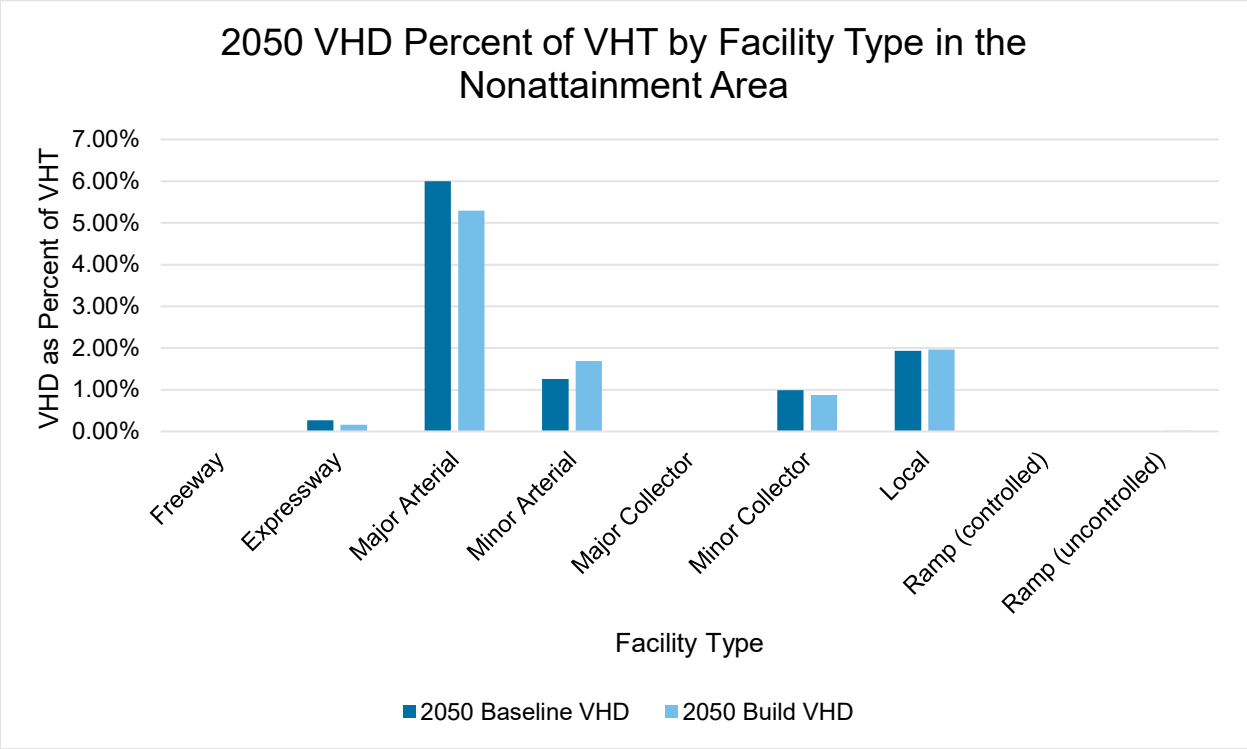
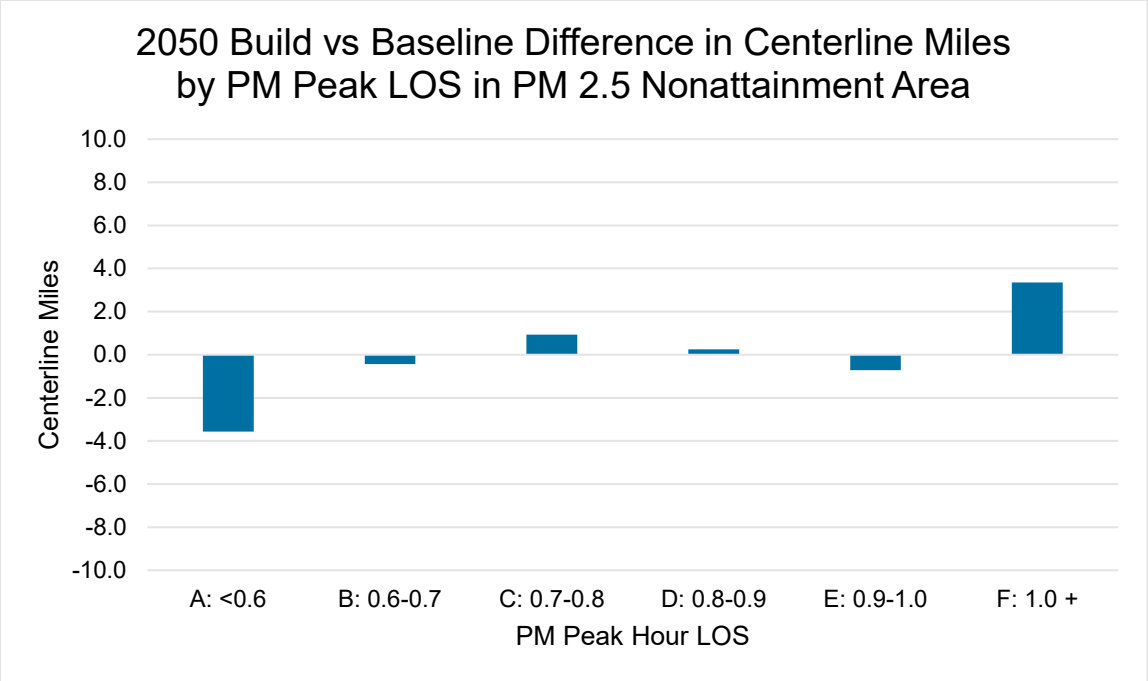


Table 11 shows centerline miles by Level of Service (LOS) within the PM 2.5 nonattainment zone between the 2050 Baseline and Build scenarios. There is no change in overall centerline miles of road. The number of centerline miles in LOS A and B decreased slightly while road miles experiencing LOS F increased the most followed by smaller increases in LOS C and D. Figure 16 shows the difference in LOS centerline miles between the 2050 Baseline and Build scenarios.

TABLE 11: 2050 BUILD VS BASELINE DIFFERENCE IN ROAD CENTERLINE MILES BY PM PEAK LOS CATEGORY IN NONATTAINMENT ZONE

PM PEAK LEVEL OF SERVICE (D/C)	2050 BASELINE CENTERLINE MILES	2050 BUILD CENTERLINE MILES	BUILD MINUS BASELINE CHANGE	2050 BASELINE % OF MILES BY LOS	2050 BUILD % OF MILES BY LOS
A: <0.6	403	400	-3.6	90%	90%
B: 0.6-0.7	10	10	-0.4	2%	2%
C: 0.7-0.8	5	6	0.9	1%	1%
D: 0.8-0.9	6	6	0.3	1%	1%
E: 0.9-1.0	6	5	-0.7	1%	1%
F: 1.0 +	15	18	3.4	3%	4%
Total	446	446	-0.2	100%	100%

FIGURE 16: 2050 BUILD VS BASELINE DIFFERENCE IN CENTERLINE MILES BY PM PEAK LOS CATEGORY WITHIN PM 2.5 NONATTAINMENT ZONE



3.0 FULL MODEL AREA SYSTEM PERFORMANCE

3.1 2021 BASE VERSUS 2050 BASELINE SCENARIO

The 2050 Baseline scenario models future system performance using the forecasted socioeconomic data and the no-build road network. This is the baseline scenario against which the future year build scenario will be compared.

Table 12 provides a comparison of key performance statistics between the 2021 Base year and 2050 Baseline scenario. The 2050 Baseline scenario forecasted an increase of 280,000 Vehicle Miles Traveled and 6,000 Vehicle Hours Traveled from the 2021 Base scenario. This corresponds to a 23% increase in VMT and 21% increase in VHT when compared to the 2021 base year.

TABLE 12: 2021 BASE YEAR ESTIMATES VERSUS 2050 BASELINE FORECAST DAILY VMT, VHT, AND VHD COMPARISON FOR THE FULL MODEL AREA

Facility Type	2021 Base VMT	2050 Baseline VMT	2021 Base VHT	2050 Baseline VHT	2021 Base VHD	2050 Baseline VHD	2019 VHD as % of VHT	2050 VHD as % of VHT
Freeway	294,087	458,349	5,408	8,409	0	0	0.00%	0.00%
Expressway	124,997	129,079	2,534	2,643	4	7	0.14%	0.27%
Principal Arterial	188,820	210,736	4,810	5,452	173	327	3.60%	6.00%
Minor Arterial	296,488	340,285	7,289	8,334	53	105	0.73%	1.26%
Major Collector	68,385	82,077	1,402	1,659	0	0	0.00%	0.00%
Minor Collector	167,107	186,206	4,551	5,110	11	50	0.24%	0.99%
Local	74,866	85,193	2,639	2,972	68	57	2.56%	1.93%
Ramp (Controlled)	7,590	8,960	228	271	0	0	0.00%	0.00%
Ramp (Uncontrolled)	30,692	35,757	795	936	0	0	0.00%	0.01%
Total	1,253,033	1,536,642	29,657	35,787	308	547	1.04%	1.53%
2050/2021 PctDiff		22.63%		20.67%		77.42%		

Figure 17 shows the total Vehicle Hours of Delay by facility type for 2050 Baseline and 2021 Base scenarios. Figure 18 shows Vehicle Hours of Delay as a percentage of Vehicle Hours of Travel. The largest increase in VHD occurred on Major Arterials with 154 additional hours of delay, smaller increases occurred on Minor Arterials and Minor Collectors, and only a slight increase of 4 hours occurred on Expressways. VHD on Local roads decreased by 10 hours.

FIGURE 17: 2050 BASELINE VERSUS 2021 BASE VEHICLE HOURS OF DELAY BY FACILITY

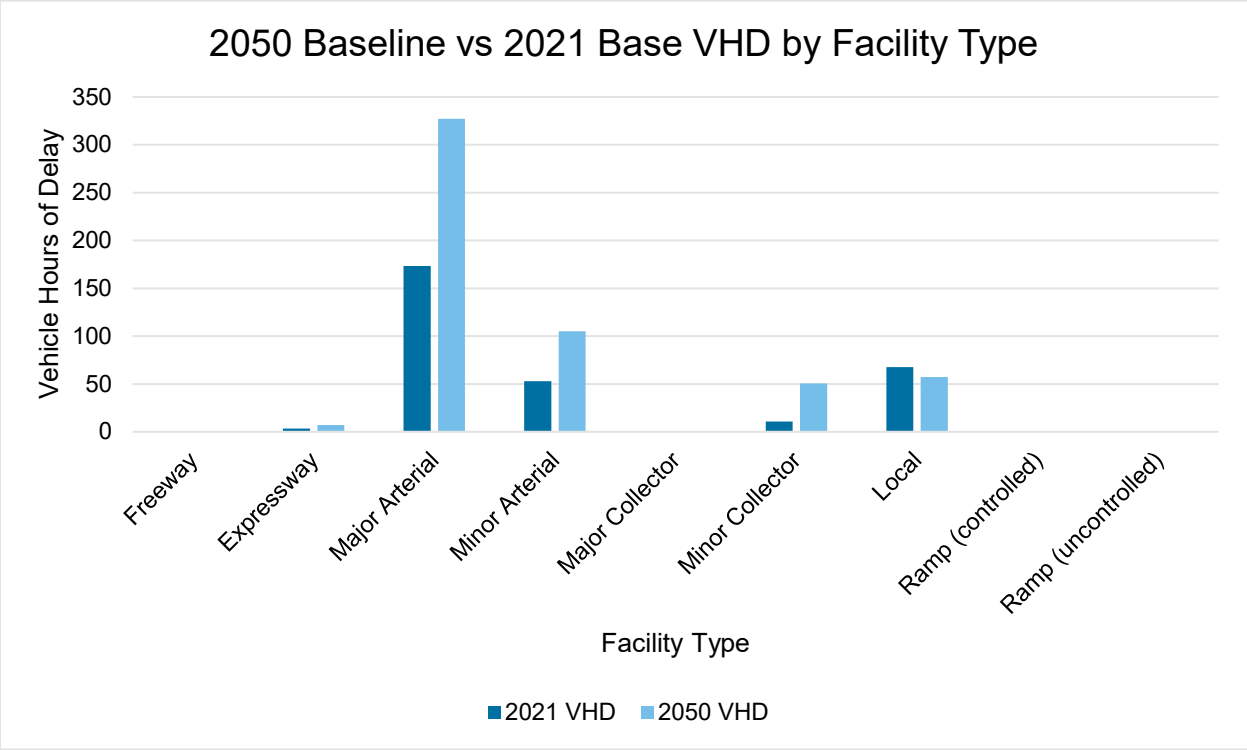


FIGURE 18: 2050 BASELINE VERSUS 2021 BASE VHD AS PERCENT OF VHT BY FACILITY TYPE

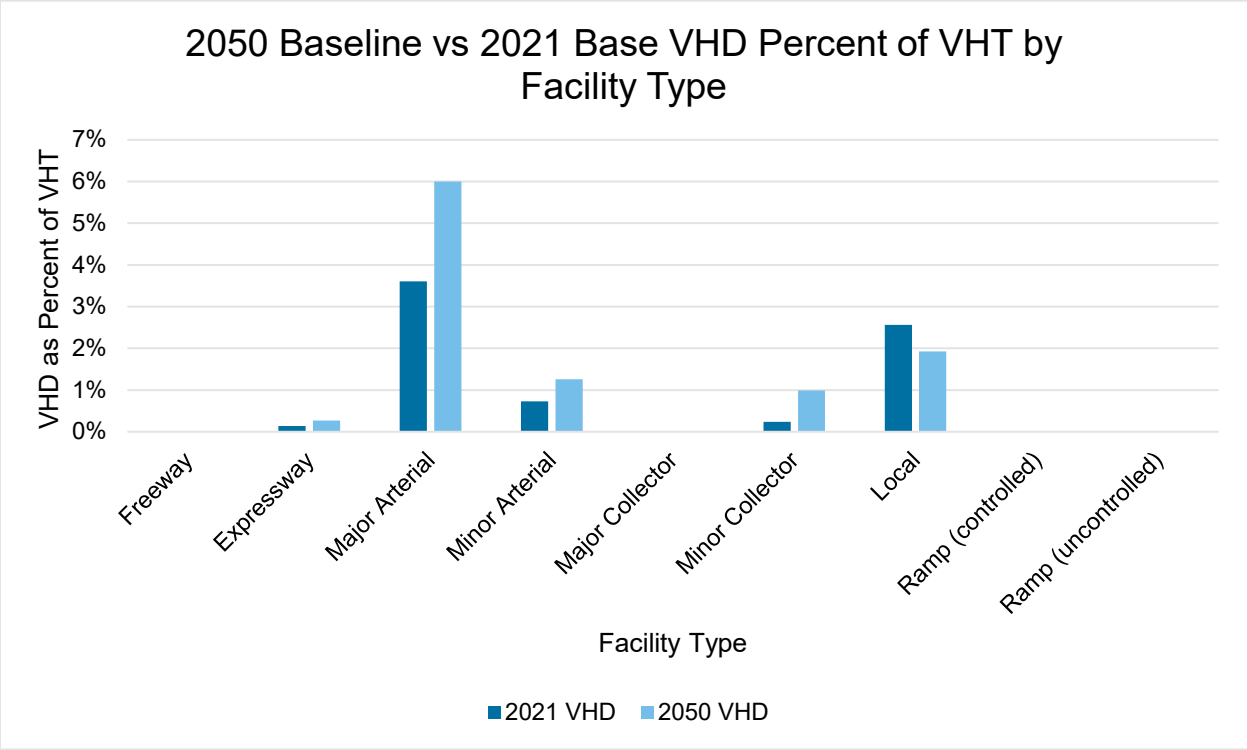


Table 13 shows centerline miles by Level of Service (LOS) for the full model area between the 2021 Base and 2050 Baseline scenarios. There is an increase of 2 centerline miles of road. In the 2050 Baseline scenario,7 centerline miles of roads would move from LOS A to lower levels of service. There is a slight decrease in LOS D and an increase in LOS F, B, and then E. Figure 19 shows the difference in LOS centerline miles between the 2021 Base and 2050 Baseline scenarios. Figure 20 presents a map of network links symbolized by LOS grade for the 2050 Baseline scenario near Downtown Fairbanks.

TABLE 13: 2050 BASELINE VS 2021 BASE DIFFERENCE IN ROAD CENTERLINE MILES BY PM PEAK LOS CATEGORY

PM PEAK LEVEL OF SERVICE (D/C)	2021 BASE CENTERLINE MILES	2050 BASELINE CENTERLINE MILES	CHANGE	2021 BASE % OF MILES BY LOS	2050 BASELINE % OF MILES BY LOS
A: <0.6	667	660	-7.4	95%	94%
B: 0.6-0.7	6	10	4.3	1%	1%
C: 0.7-0.8	5	5	0.0	1%	1%
D: 0.8-0.9	7	6	-1.0	1%	1%
E: 0.9-1.0	5	6	1.2	1%	1%
F: 1.0 +	10	15	5.3	1%	2%
Total	700	702	2.4	100%	100%

FIGURE 19: 2050 BASELINE VS 2021 BASE DIFFERENCE IN CENTERLINE MILES BY PM PEAK LOS CATEGORY

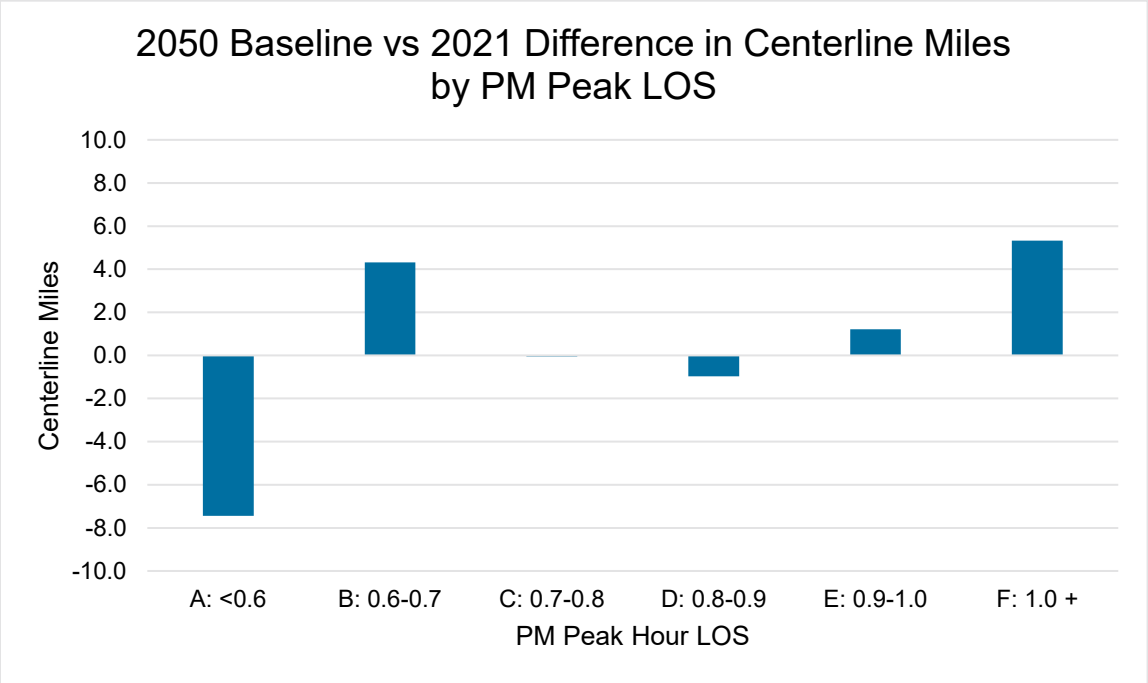
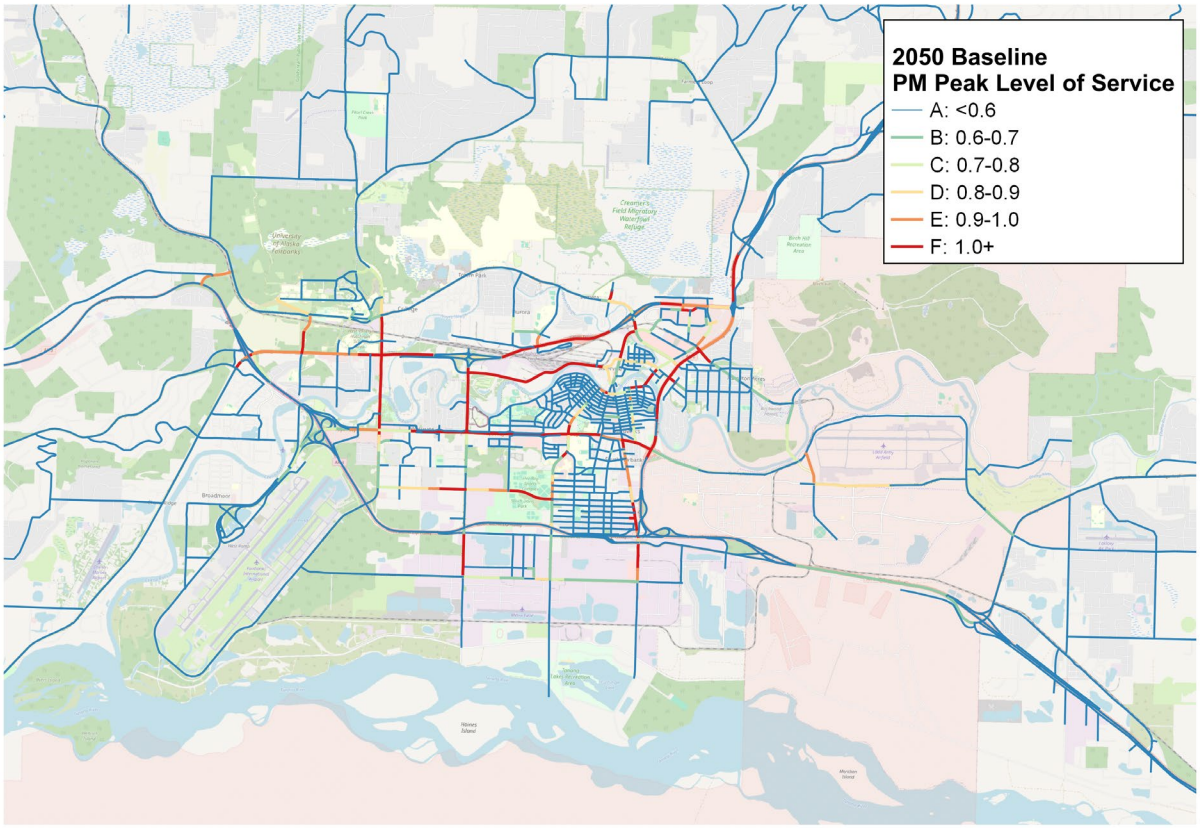


FIGURE 20: MAP OF 2050 BASELINE PM PEAK LOS NEAR DOWNTOWN FAIRBANKS



3.2 2050 BASELINE VS BUILD

Table 14 lists VMT, VHT, and VHD for the full model area by facility type for the 2050 Baseline and Build scenarios. VHD for the full model area is similar to VHD in the PM 2.5 Nonattainment area because this area is where most delay occurs. The Build scenario is very similar to the Baseline in terms of VMT and VHT while there was a modest decrease in VHD overall in the Build scenario.

TABLE 14: 2050 BASELINE VS BUILD FORECAST DAILY VMT, VHT, AND VHD COMPARISON BY FACILITY TYPE

FACILITY TYPE	2050 BASELINE VMT	2050 BUILD VMT	2050 BASELINE VHT	2050 BUILD VHT	2050 BASELINE VHD	2050 BUILD VHD	2050 BASELINE VHD AS % OF VHT	2050 BUILD VHD AS % OF VHT
Freeway	458,349	444,220	8,409	8,152	0	0	0.00%	0.00%
Expressway	129,079	129,352	2,643	2,647	7	4	0.27%	0.16%
Major Arterial	210,736	210,860	5,452	5,402	327	286	6.00%	5.29%
Minor Arterial	340,285	353,249	8,334	8,590	105	145	1.26%	1.69%
Major Collector	82,077	82,236	1,659	1,665	0	0	0.00%	0.00%
Minor Collector	186,206	185,725	5,110	5,091	50	44	0.99%	0.87%
Local	85,193	86,011	2,972	3,000	57	59	1.93%	1.97%
Ramp (Controlled)	8,960	9,191	271	279	0	0	0.00%	0.00%
Ramp (Uncontrolled)	35,757	34,139	936	888	0	0	0.01%	0.01%
Total	1,536,642	1,534,982	35,787	35,716	547	539	1.53%	1.51%
Build vs Baseline % Difference		-0.11%		-0.20%		-1.53%		

Figure 21 shows the total Vehicle Hours of Delay by facility type for 2040 Baseline and Build scenarios in the Nonattainment area. Figure 22 shows Vehicle Hours of Delay as a percentage of Vehicle Hours of Travel. The largest decrease in VHD occurred on Major Arterials while a similar increase of about 40 hours of delay occurred on Minor Arterials. There was a smaller decrease on both Minor Collectors and Expressways and a slight increase on Local roads.

FIGURE 21: 2050 BASELINE VS BUILD FORECAST VEHICLE HOURS OF DELAY BY FACILITY TYPE

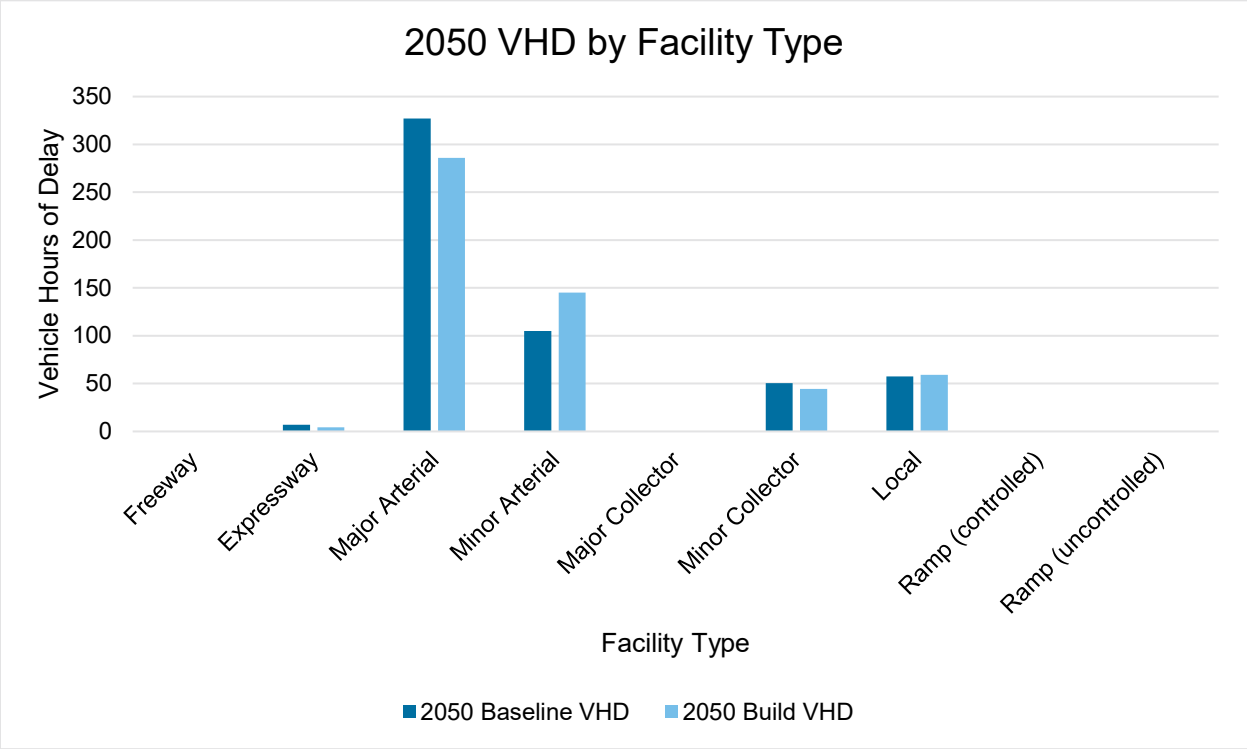


FIGURE 22: 2050 BASELINE VS BUILD FORECAST VHD AS PERCENT OF VHT BY FACILITY TYPE

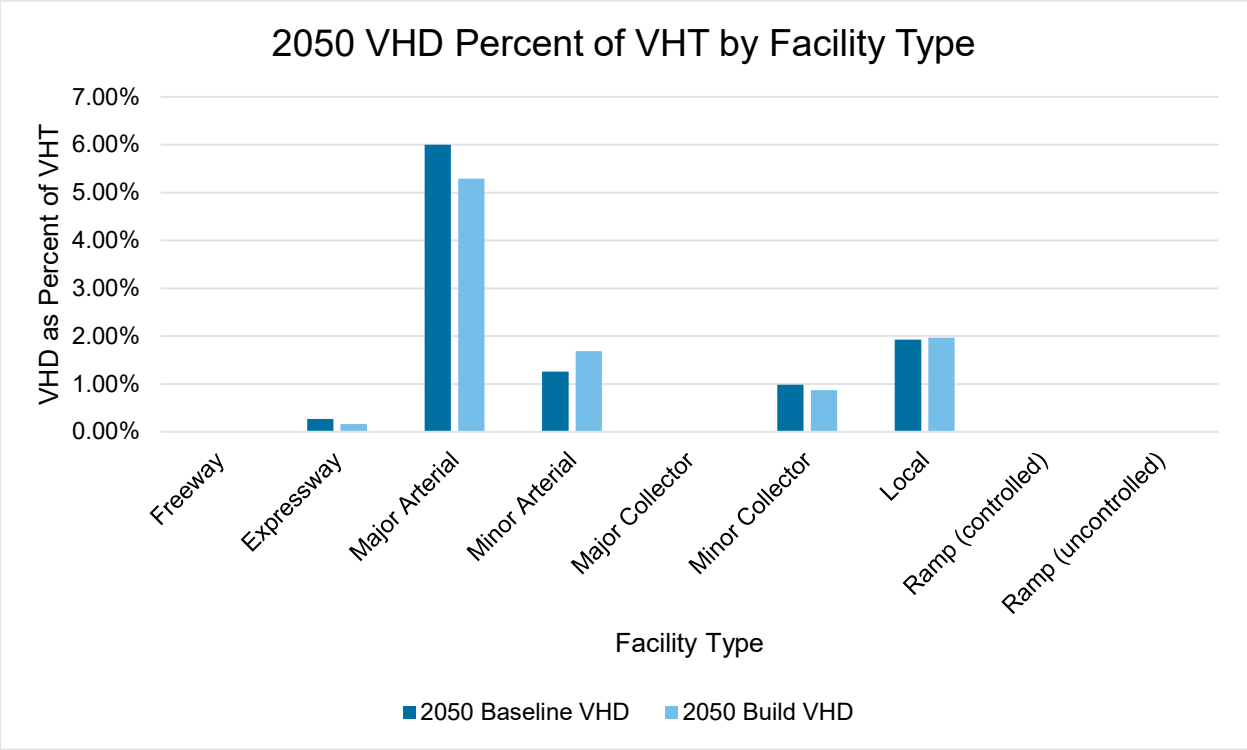


Table 15 shows centerline miles by Level of Service (LOS) for the full model area between the 2050 Baseline and Build scenarios. There is a very small decrease in overall centerline miles of road in the Build scenario. The number of centerline miles in LOS A decreased most followed by LOS E and B. The largest increase was in LOS F, followed by slight increases in LOS C and D. Figure 23 shows the difference in LOS centerline miles between the 2050 Baseline and Build scenarios. Figure 24 presents a map of network links symbolized by LOS grade for the 2050 Build scenario near Downtown Fairbanks. In the Build scenario, College Rd is reduced from 2 lanes in each direction to 1 and moved from LOS A to F.

TABLE 15: 2050 BUILD VS BASELINE DIFFERENCE IN ROAD CENTERLINE MILES BY PM PEAK LOS CATEGORY

PM PEAK LEVEL OF SERVICE (D/C)	2050 BASELINE CENTERLINE MILES	2050 BUILD CENTERLINE MILES	BUILD MINUS BASELINE CHANGE	2050 BASELINE % OF MILES BY LOS	2050 BUILD % OF MILES BY LOS
A: <0.6	429	433	-3.6	61%	62%
B: 0.6-0.7	26	22	-0.4	4%	3%
C: 0.7-0.8	33	32	0.9	5%	5%
D: 0.8-0.9	20	22	0.3	3%	3%
E: 0.9-1.0	8	7	-0.7	1%	1%
F: 1.0 +	185	185	3.4	26%	26%
Total	702	702	-0.2	100%	100%

FIGURE 23: 2050 BUILD VS BASELINE DIFFERENCE IN CENTERLINE MILES BY PM PEAK LOS CATEGORY

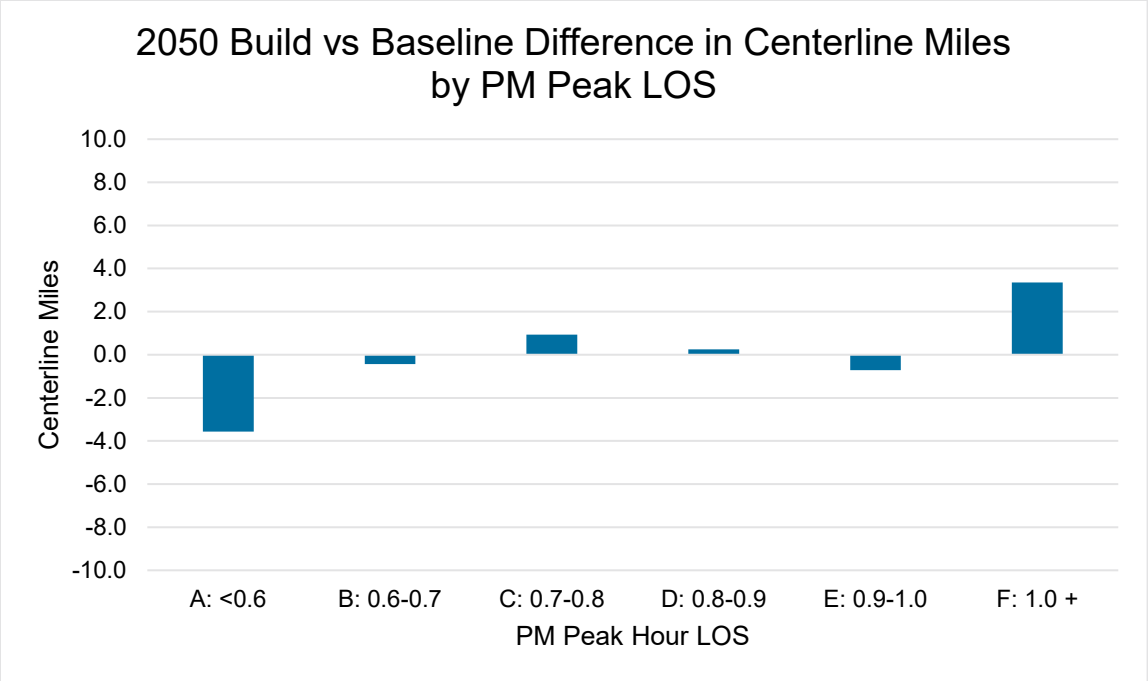


FIGURE 24: MAP OF 2050 BUILD PM PEAK LOS NEAR DOWNTOWN FAIRBANKS

